

Advising Parents on Complementary Feeding and Food Allergy Prevention



Pediatric Nutrition
CONTINUING EDUCATION FOR CLINICIANS

Presented by
Raquel Durban, MS, RD, LDN
Ruchi S. Gupta, MD, MPH
Olga Kagan, PhD, RN



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Faculty Presenters

Ruchi S. Gupta, MD, MPH

Professor of Pediatrics and Medicine
Northwestern University Feinberg
School of Medicine
Clinical Attending
Lurie Children's Hospital of Chicago
Founding Director
Center for Food Allergy & Asthma
Research
Chicago, Illinois

Raquel Durban, MS, RD, LDN

Registered Dietitian
Carolina Asthma and Allergy Center
Charlotte, North Carolina

Olga Kagan, PHD, RN

Consortial Faculty & Associate
Adjunct Professor
The City University of New York
School of Professional Studies
Adjunct Faculty
Barbara H. Hagan School of Nursing
& Health Sciences
Molloy University
Principal
Olga Kagan Health Care Consulting
Founder
Food Allergy Nurses Interest Group
New York



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Ruchi S. Gupta, MD, MPH

No financial relationships to disclose.

Raquel Durban, MS, RD, LDN

Consultant Abbott, Reckitt | Mead Johnson Nutrition

Speakers Bureau Nutricia

Olga Kagan, PHD, RN

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Learning Objectives


By participating in this education, you will better:



Understand the current recommendations for introducing complementary foods during infancy



Maximize the prevention of food allergies by applying the latest guidelines for feeding common food allergens



Provide parents and caregivers with clear advice for complementary food introduction and food allergy prevention



Complementary Feeding Recommendations and Challenges

Ruchi S. Gupta, MD, MPH



Role of Complementary Feeding in Infant Development

According to the WHO, **complementary feeding** is “the process of providing foods in addition to milk when breast milk or milk formula alone are no longer adequate to meet nutritional requirements.”^[1]

- During the complementary feeding period, **lifelong behaviors** begin to take shape^{[1],[2]}
- Window of opportunity to learn about flavor, be exposed to textures, and experience a wide variety of foods^{[1],[2]}
- Parent/caregiver responsiveness to infant’s hunger and fullness creates dynamic around feeding and eating^[3]
- Therefore, the complementary feeding period is critically important for **growth, development,** and **creating positive experiences** with foods and eating^{[1],[2]}



Basic Recommendations for Complementary Feeding: When to Feed

- Most recommendations are to introduce complementary foods **between 4 and 6 months of age**^{[1]-[3]}
 - **Not before 4 months** due to lack of developmental readiness, the need for breast milk or infant formula to meet nutritional needs, and increased risk of future obesity
 - **Around or before 6 months** due to declining levels of key nutrients in breast milk and increased risk of food allergy if exposure is delayed
- Most typically developing infants have the **necessary developmental skills** to begin traditional complementary feeding at 4–6 months of age^{[1],[2]}
 - Examples include control of head and neck, bringing objects to the mouth, palmar grasp, loss of tongue thrust

[1]. WHO. WHO Guideline for complementary feeding of infants and young children 6-23 months of age. October 16, 2023.

<https://www.who.int/publications/i/item/9789240081864>. [2]. US Department of Agriculture (USDA). Dietary Guidelines for Americans, 2020-2025. December 2020. https://www.dietaryguidelines.gov/sites/default/files/2021-03/Dietary_Guidelines_for_Americans-2020-2025.pdf. [3]. Fewtrell M et al. *J Pediatr*

Gastroenterol Nutr. 2017;64(1):119-132.



Basic Recommendations for Complementary Feeding: How and What to Feed

Infants should be fed nutrient-dense, developmentally appropriate foods alongside continued breastfeeding or formula feeding, with a focus on:

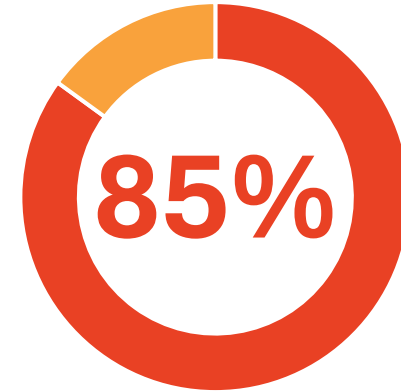
- Adequate micronutrient content (eg, iron and zinc, particularly for breastfed infants)
- Variety and diversity, with eventual inclusion of all food groups
- Exposure to different flavors and developmentally appropriate textures
- Avoiding added sugars, high-sodium snacks and meats, and processed foods



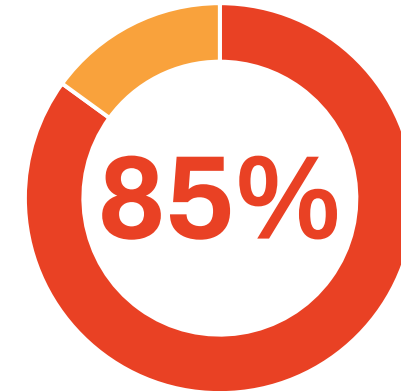
Challenges of the Transition to Complementary Feeding for Parents

- Complementary feeding represents a major role shift
- Caregivers must juggle several priorities, including both short-term nutritional needs and long-term goals for establishing healthy eating patterns
- Many caregivers report feeling overwhelmed and anxious^{[1],[2]}
 - Many turn to social media, family, and friends for guidance

Perceived Threats During Complementary Feeding^[1]



of mothers feared **choking** during complementary feeding



of mothers feared **food allergy reactions** during complementary feeding

[1]. Graf MD et al. *Appetite*. 2022;171:105914. [2]. Thompson KL et al. *J Fam Nurs*. 2023;29(4):348-367.



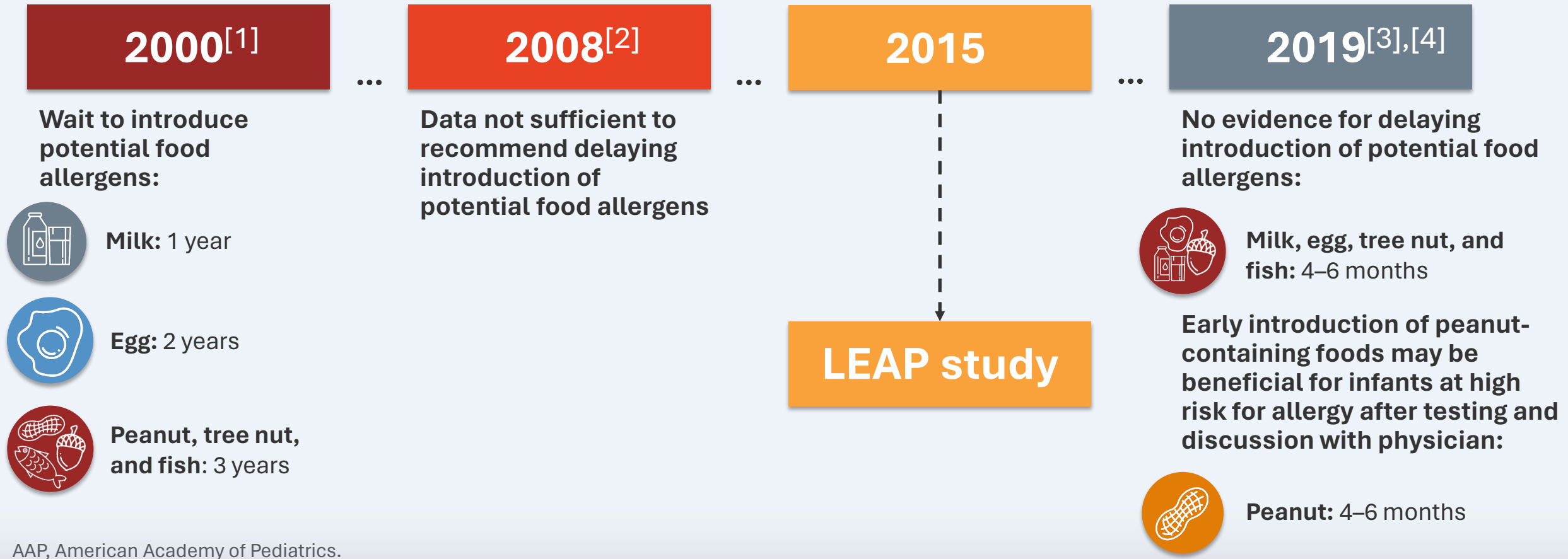
Early Introduction and Allergy Prevention

Ruchi S. Gupta, MD, MPH



The Evolving Approach to Allergy Prevention

AAP and NIAID Recommendations on Preventing Food Allergy



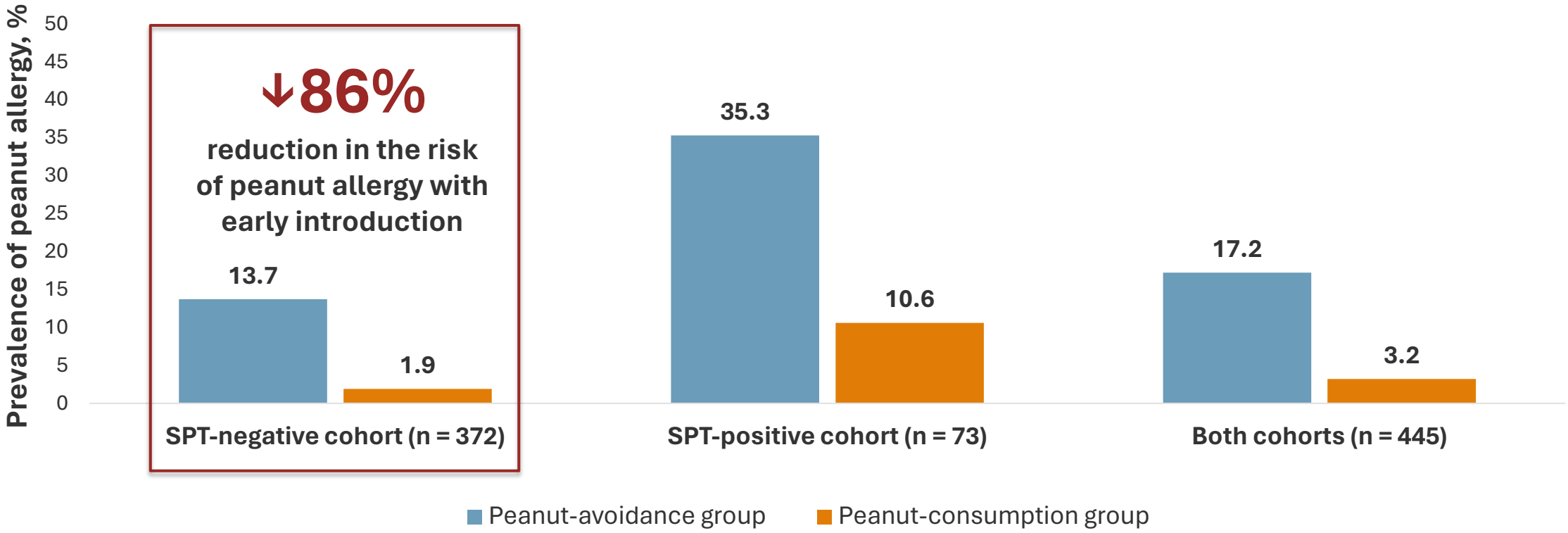
AAP, American Academy of Pediatrics.

[1]. Zeiger RS. *Pediatrics*. 2003;111(6 Pt 3):1662-1671. [2]. Greer FR et al. *Pediatrics*. 2008;121(1):183-191. [3]. Greer FR et al. *Pediatrics*. 2019;143(4). pii:e20190281. [4]. Togias A et al. *J Acad Nutr Diet*. 2017;117(5):788-793.



Evidence for Early Introduction of Potential Food Allergens

LEAP Trial of 4- to 11-Month-Old High-Risk Infants: Peanut Allergy at 60 Months



Du Toit G et al. *N Engl J Med.* 2015;372(9):803-813.



Benefit of Early Introduction Across Different Potential Food Allergens

Meta-analysis of 23 RCTs that enrolled 13,794 participants to evaluate the timing of potential food allergen introduction and the risk of developing IgE-mediated food allergies

Risk Reduction With Earlier vs Later Introduction^[a]



↓51%

for **multiple potential food allergens** based on moderate-certainty evidence



↓69%

for **peanut** (from age 3–10 months) based on high-certainty evidence



↓40%

for **egg** based on high-certainty evidence



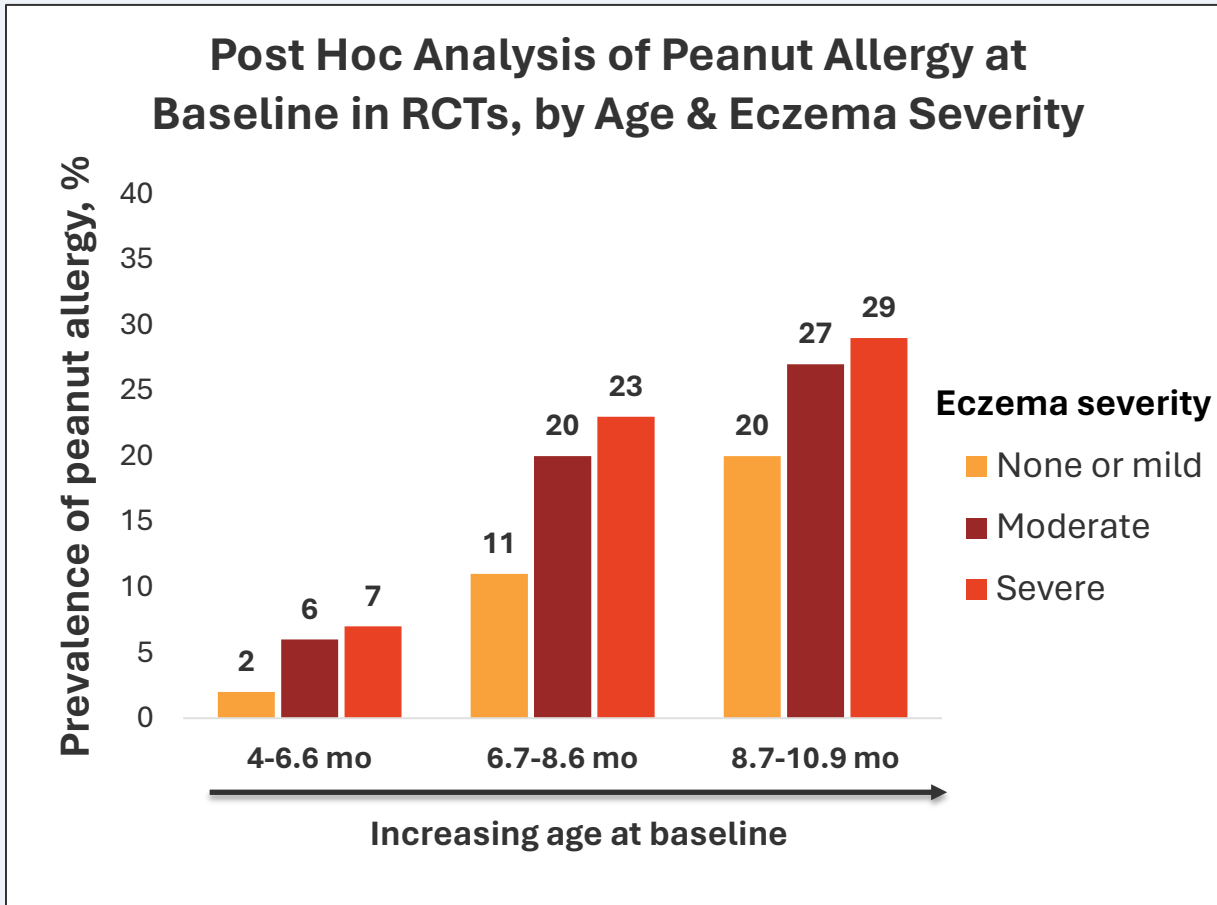
↓16%

for **cow's milk** based on very low-certainty evidence

a. Age for “earlier” introduction varied by food allergen: multiple allergenic foods, 2-12 months (median, 3-4 months); peanut, 3-10 months; egg, 3-6 months; and cow's milk, first day of life to 4 months.



A “Window of Opportunity” for Early Introduction



- There is a **narrow window of opportunity** to prevent peanut allergy
- The window closes earliest for infants with severe eczema
 - **~1 in 4** already had peanut allergy at by ~9 months of age
- Peanut allergy **risk reduction declines** with **every month** that introduction is delayed
 - 77% reduced risk with introduction at 4–6 months; 33% at 12 months

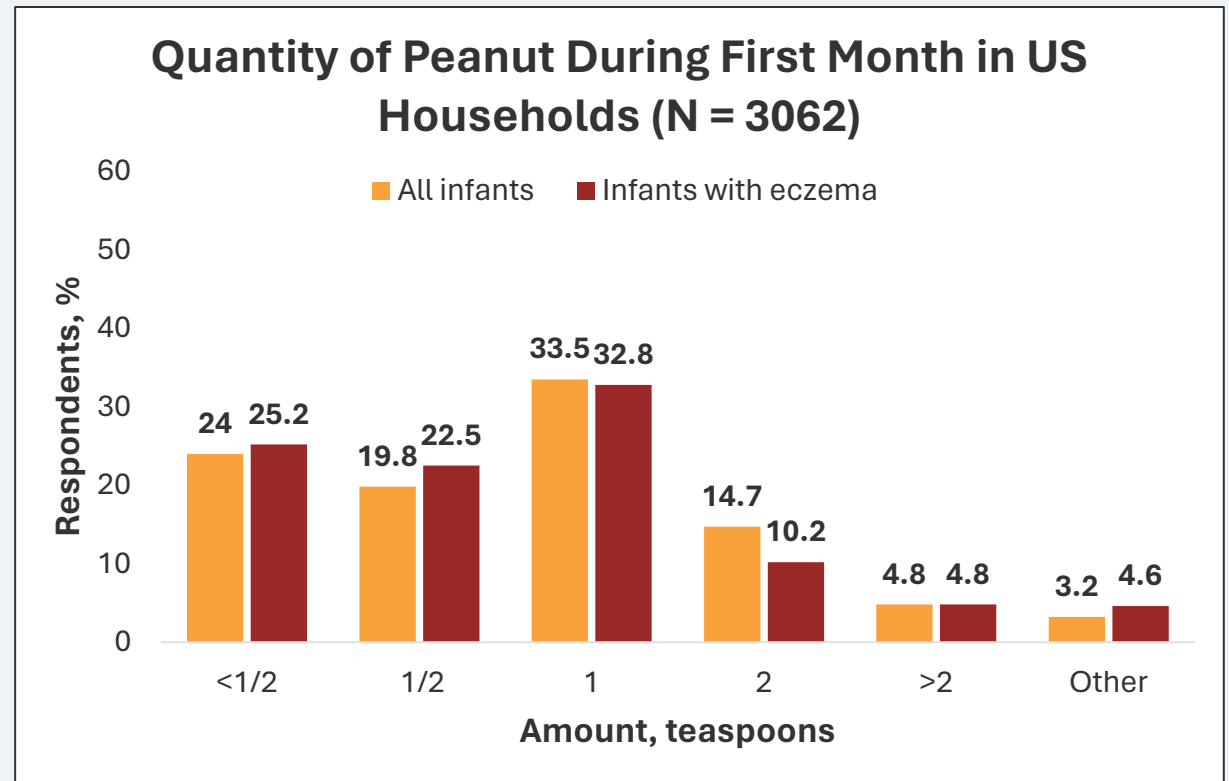
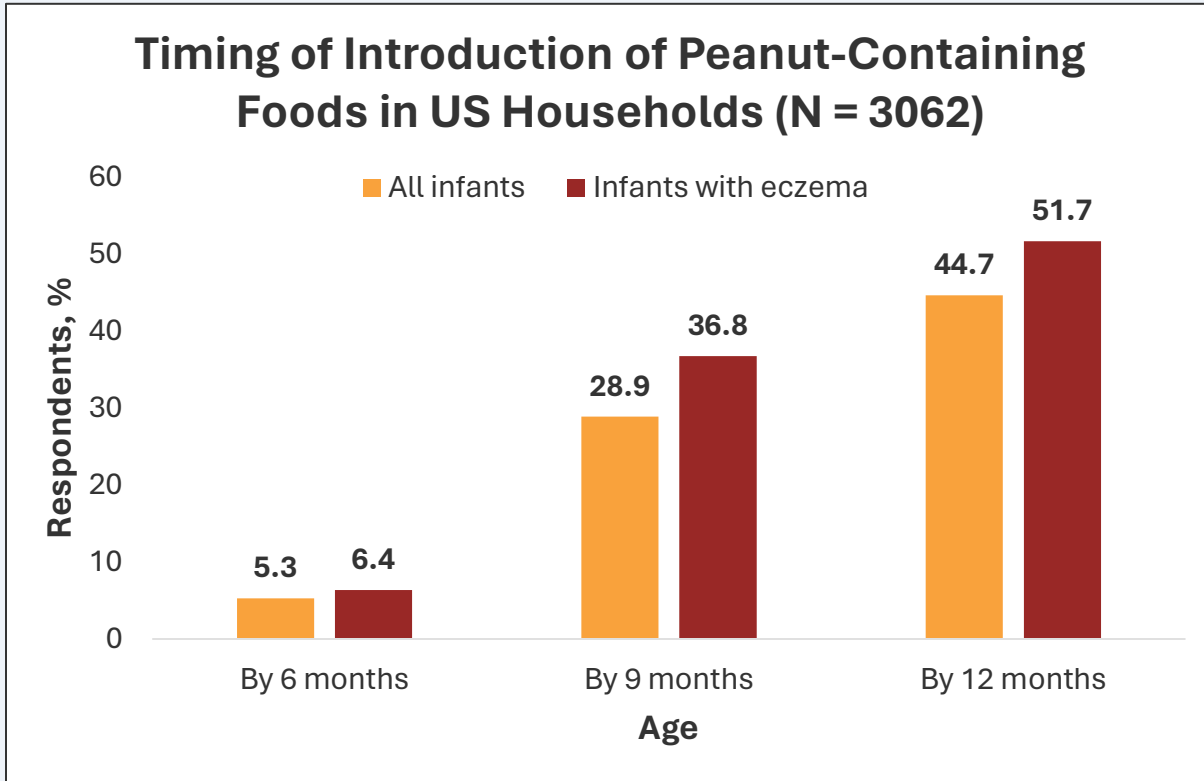


Real-World Allergy Prevention Practices

Ruchi S. Gupta, MD, MPH



US Peanut-Containing Food Introduction



Less than one-half
of infants had peanut-containing
foods introduced by 1 year of age

Only 1 in 5
received the recommended amount
of peanut-containing foods



Potential Barriers to Early Introduction in US Households

- **Suboptimal awareness** of the benefits of early introduction and the risks of food allergy
- **Lack of access** to foods containing potential allergens
- **Lack of resources** on safe preparation of foods containing potential allergens
- **Caregiver fears** of reactions or choking
- **No recommendation** from pediatrician or pediatric provider



Pediatric Provider Recommendations for Complementary Feeding and Early Introduction

| Percentage of Pediatric Providers Recommending Food Introduction, by Breastfeeding Status and Age (N = 563) ^[1] | | | |
|--|----------|----------|----------|
| | 4 months | 5 months | 6 months |
| Exclusively breastfed | 31.8 | 17.9 | 47.6 |
| Not exclusively breastfed | 42.5 | 20.2 | 34.3 |

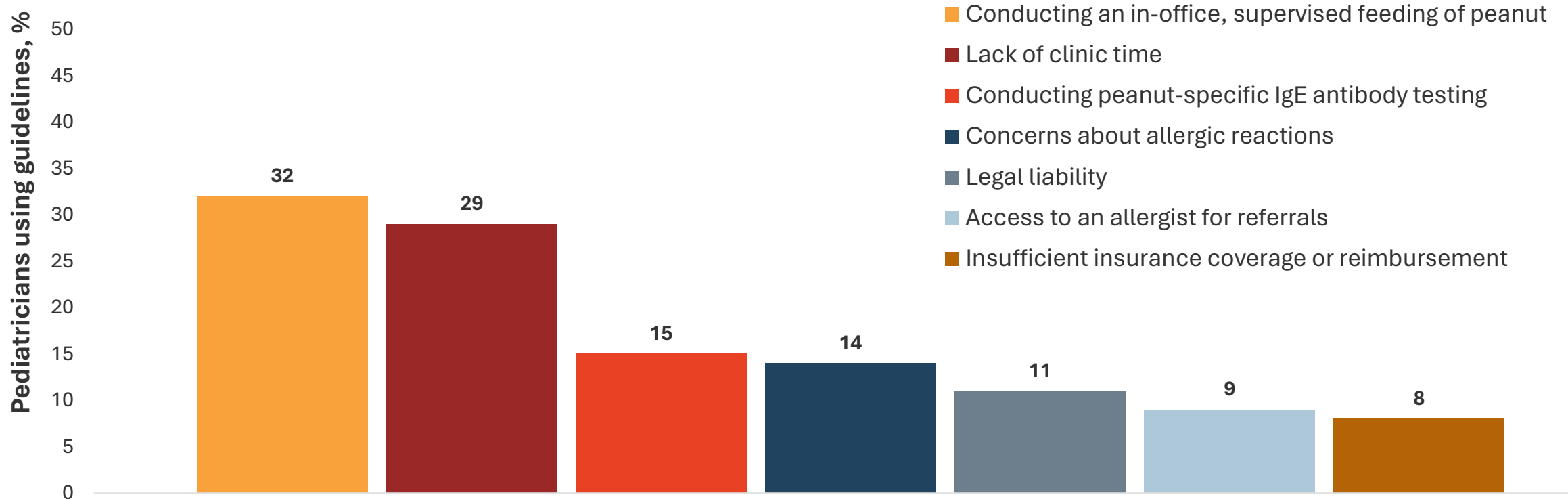
- Providers more likely to recommend **waiting to introduce** complementary foods for **exclusively breastfed infants**^[1]
- In a survey of 2135 pediatricians, **68% felt they needed more training on the NIAID guidelines** for early introduction of potential food allergens^[2]

[1]. Samady W et al. *Pediatrics*. 2023;152(2):e2022059376. [2]. Gupta RS et al. *JAMA Netw Open*. 2020;3(7):e2010511.



Barriers to Early Introduction Among Providers

Barriers and Concerns for Early Introduction Guideline Implementation
Among Pediatric Providers



Barriers to Uptake: Conflicting Recommendations About Complementary Feeding Timing



Recommendation (2023):
Introduction of complementary foods at **6 months**^[1]



Recommendation (2017):
Risk-based peanut introduction between **4–6 months**^[4]



Recommendation (2022):
Exclusive breastfeeding through **“about 6 months”**^[2]



Recommendation (2021):
Introduction of peanut and egg **“around 6 months, but not before 4 months”**^[5]



Recommendation (2020):
Introduction of complementary foods at **“about 6 months”**^[3]



Recommendations:
Wait 3–5 days between the introduction of new foods^{[6],[7]}

[1]. WHO. WHO Guideline for complementary feeding of infants and young children 6-23 months of age. October 16, 2023. <https://www.who.int/publications/i/item/9789240081864>. [2]. Meek JY et al. *Pediatrics*. 2022;150(1):e2022057988. [3]. USDA. Dietary Guidelines for Americans, 2020-2025. December 2020. https://www.dietaryguidelines.gov/sites/default/files/2021-03/Dietary_Guidelines_for_Americans-2020-2025.pdf. [4]. Togias A et al. *J Acad Nutr Diet*. 2017;117(5):788-793. [5]. Fleischer DM et al. *J Allergy Clin Immunol Pract*. 2021;9(1):22-43.e24. [6]. CDC. Reviewed June 27, 2023. <https://www.cdc.gov/nutrition/infantandtoddernutrition/foods-and-drinks/when-to-introduce-solid-foods.html>. [7]. Hagan JF et al, eds. *Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents*. AAP; 2022.



Best Practices for Supporting Parents Starting Complementary Feeding



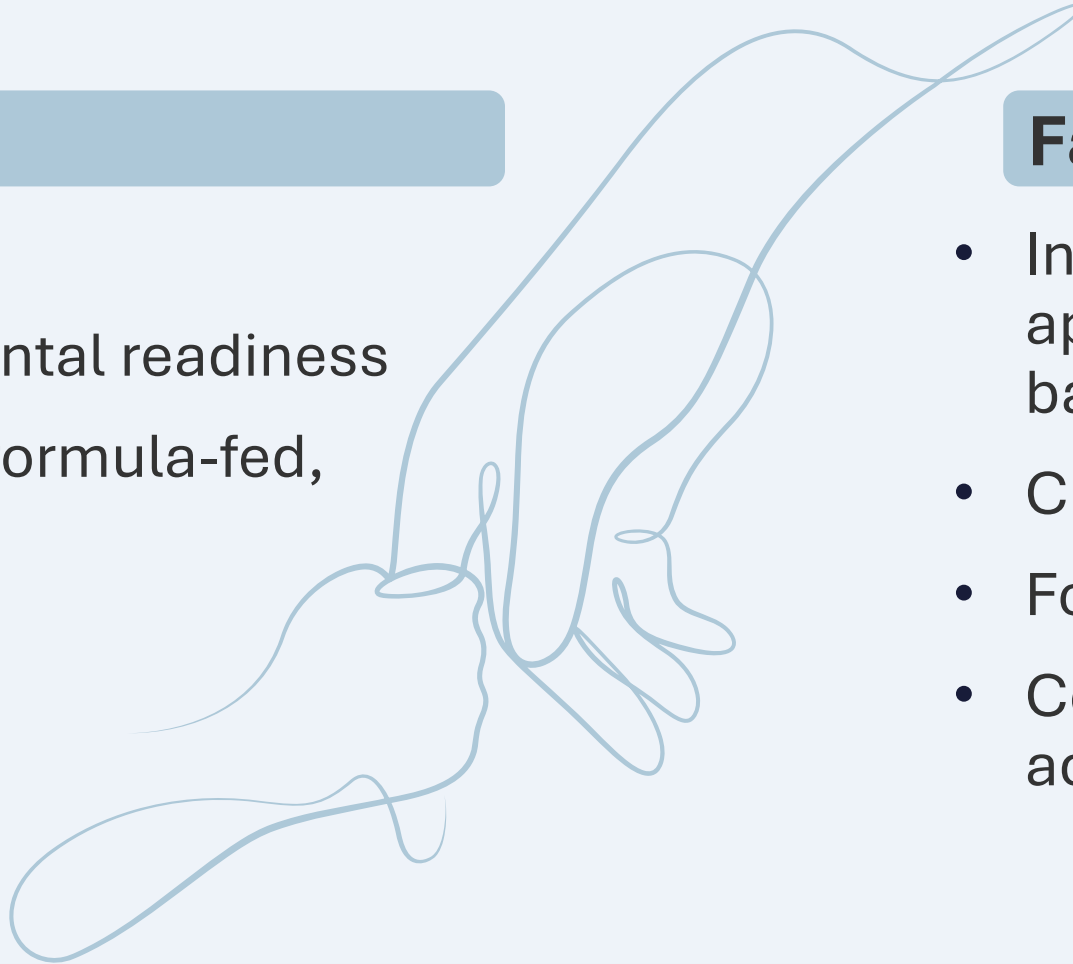
Offer Anticipatory Guidance Based on Key Considerations

Baby

- Age
- Developmental readiness
- Breastfed, formula-fed, or both?
- Allergy risk

Family & Caregiver

- Intended complementary feeding approach (traditional spoon feeding, baby-led weaning, or combination?)
- Cultural practices
- Food security
- Confidence, educational needs, and access to resources



North American Allergy Consensus Recommendations for Early Introduction

- **Introduce 1 single-ingredient** food at a time
 - Note: although introduction of a new food every 3 days has long been recommended, this is not an evidence-based practice
- **Feed peanut-** and **egg-containing foods** beginning between 4–6 months of age
 - Encourage at least 1–2 tsp of thinned peanut butter or egg per week
 - Focus on regular, consistent exposure over several years
 - Do **not** discontinue peanut except for allergic reactions
- Do **not** purposefully delay the introduction of other common allergens once complementary feeding starts
 - Introduce common allergens according to cultural and family preferences as part of a diverse complementary diet



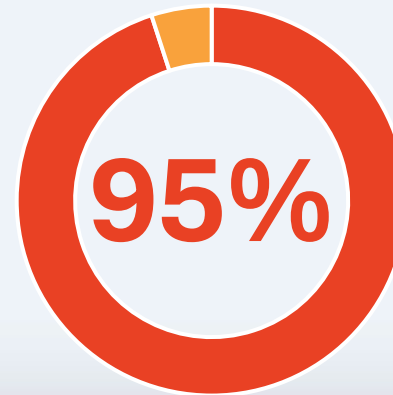
Early Introduction and Ongoing Breastfeeding

Breast milk or infant formula should continue to be the main source of nutrition during the first year of life.^[1]



Remind caregivers that early introduction and breastfeeding are not mutually exclusive.

In the EAT study, which randomized breastfed infants to early introduction or continued breastfeeding, **95% of infants in the early introduction group** were still being **breastfed at 6 months**, at rates equivalent to the control group and exceeding UK rates.^[2]



[1]. Fleischer DM et al. *J Allergy Clin Immunol Pract.* 2021;9(1):22-43.e24. [2]. Perkin MR et al. *J Allergy Clin Immunol.* 2016;137(5):1477-1486.e1478.



Examples of Infant-Safe Forms of Common Allergens



Peanut

- Peanut butter thinned with breast milk, formula, or pureed foods
- Peanut powder mixed with pureed foods
- Peanut puffs



Egg

- Well-cooked boiled or scrambled eggs
- Egg-containing baked goods (within the first ~3 ingredients)



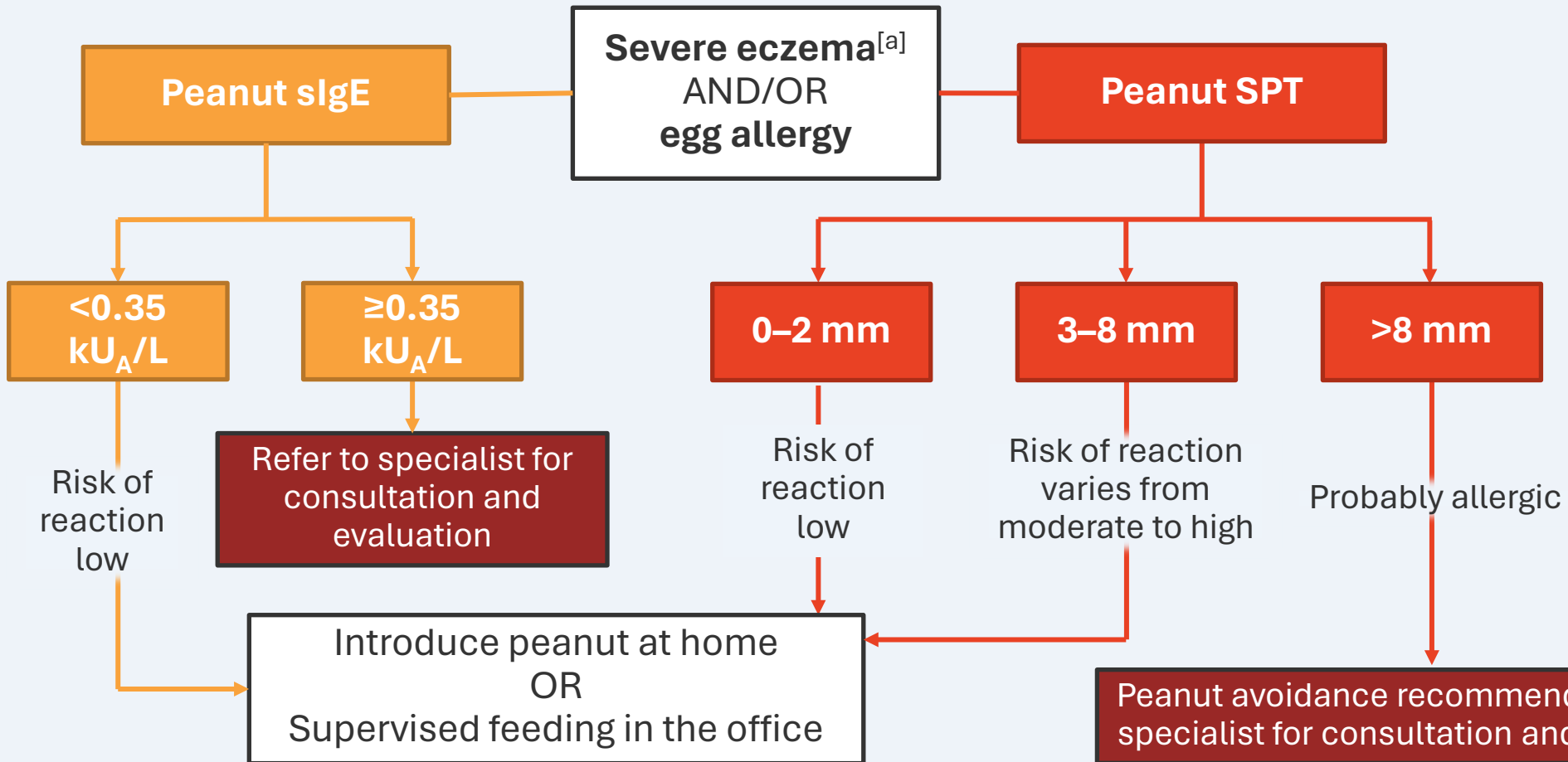
Others

- Tree nuts—thinned nut butters
- Milk—infant formula, yogurt
- Wheat—softly cooked pasta, baked goods
- Soy—soft tofu, soy yogurt
- Sesame—hummus or thinned tahini

Ensure developmental readiness and demonstration of sufficient oral-motor skills for safe feeding



NIAID Recommendation for Screening in High-Risk Infants



Screening recommendations may delay introduction due to... [2],[3]

- Screening creep
- Lack of access
- Long wait times for testing
- Overdiagnosis from underuse of oral food challenge

a. NIAID defines severe eczema as “defined as persistent or frequently recurring eczema with typical morphology and distribution assessed as severe by a health care provider and requiring frequent need for prescription-strength topical corticosteroids, calcineurin inhibitors, or other anti-inflammatory agents despite appropriate use of emollients.”^[1]

[1]. NIAID-Sponsored Expert Panel. 2017. <https://www.niaid.nih.gov/sites/default/files/addendum-peanut-allergy-prevention-guidelines.pdf>. [2]. Volertas S et al. *J Allergy Clin Immunol Pract*. 2020;8(3):1091-1093.e2. [3]. Gupta RS et al. *JAMA Netw Open*. 2020;3(7):e2010511.



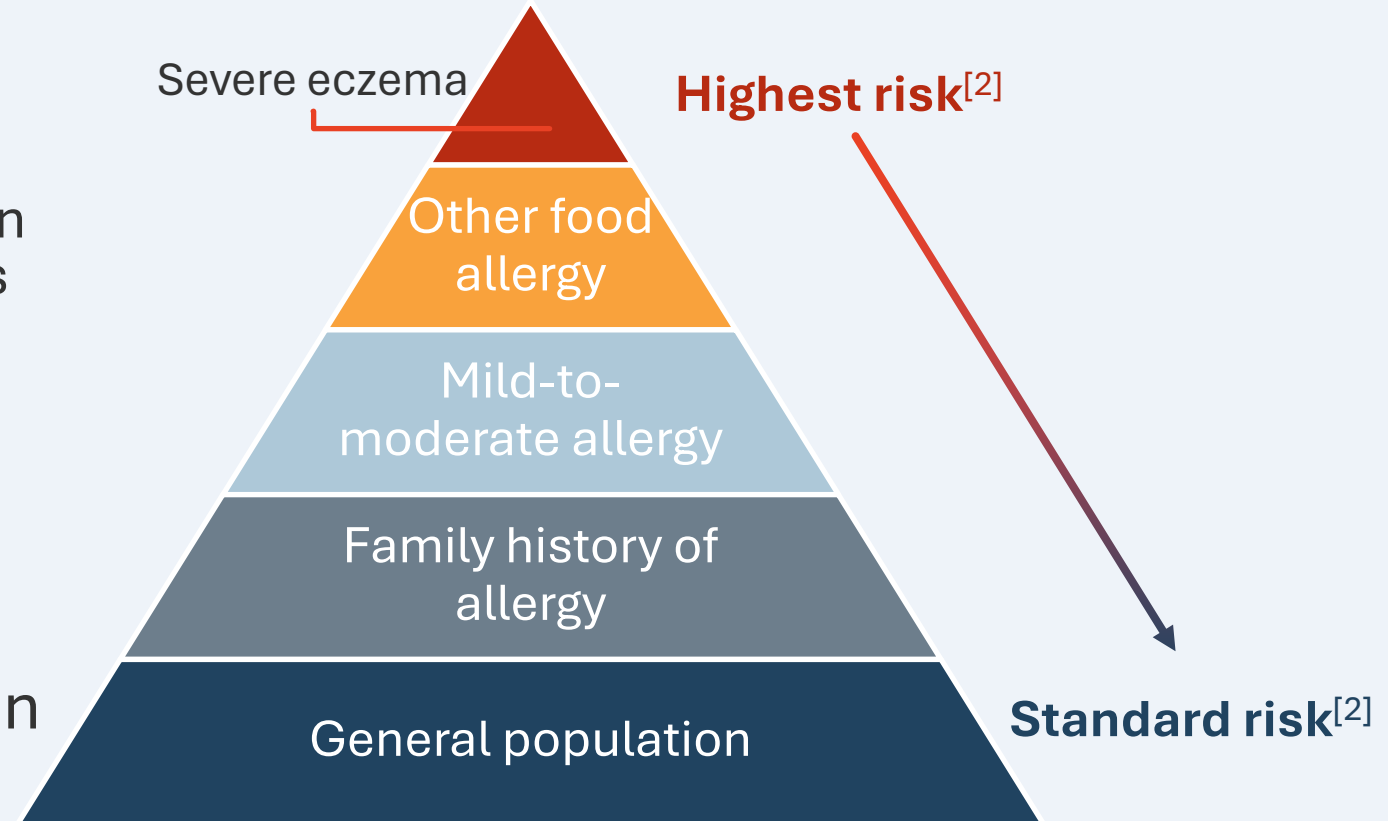
AAAAI/ACAAI Recommendations on Screening

- Screening SPT or sIgE testing and/or in-office introduction is **not** required for early introduction of peanut-containing foods
- However, this remains an option for certain families, taking into consideration:
 - Current evidence
 - Family preferences



Avoiding Overmedicalization: Meeting Parents Where They're At

- At-home early introduction without screening is **safe**^[1]
 - Most infants are at **low risk** for food allergy
 - Risk of a serious food allergy reaction with the first introduction of a food is **very rare**
- When considering screening evaluate risk as a gradient and discuss the risks and benefits of both delayed introduction with screening and of early introduction for allergy prevention^[2]



Case Study: New Parents

Ruchi S. Gupta, MD, MPH



New Parents: 4-Month Well-Child Visit

- **4-month-old, exclusively breastfed** infant brought in for well-child visit by both parents
 - Both parents are immigrants from East Asia
 - Dad speaks English and translates for Mom
- Physical examination reveals normal growth (50th height-for-weight percentile) and developmental milestones
- Parents ask about **introducing solid foods**, as Baby is starting daycare, and Mom is going back to work soon



How should these parents be counseled about the introduction of complementary feeding?

New Parents: 6-Month Well-Child Visit

At the 6-month visit, the parents report:

- Partial breastfeeding supplemented with cow's milk formula
- Following a baby-led weaning approach for complementary feeding recommended by friends
- Baby has refused many vegetables to date, and parents are concerned this may persist



Case Study: Siblings With Food Allergy

Raquel Durban, MS, RD, LDN



Siblings With Food Allergy: Parent Counseling

- **4-month-old** infant brought in for well-child visit by both parents
- Medical history is unremarkable
- During discussion of complementary feeding and early introduction, parents share that Baby's **3-year-old sister has severe IgE-mediated allergy** to peanut and intolerance of cow's milk
- As a result, they are reluctant to keep either food in the home, and they are **nervous about early introduction**



How should these parents be counseled about safe early introduction?

Case Study: Infant With Eczema

Olga Kagan, PhD, RN



Infant With Severe Eczema: Presentation and Next Steps

- **5-month-old, exclusively breastfed** infant presenting to pediatrician for evaluation of ongoing eczema for the last month
 - Eczema is **severe** and covers face and neck
- Use of moisturizers after baths and topical corticosteroids has improved but **not entirely eliminated** symptoms
- Medical history otherwise unremarkable



What next steps do you recommend for this infant, and how should complementary feeding be discussed?

Key Takeaways



Key Takeaways: Complementary Feeding



The complementary feeding period is critically important for growth, development, and creating positive experiences with foods and eating



Infants should be fed nutrient-dense, developmentally appropriate foods alongside continued breastfeeding or formula feeding from 6–11 months



Most recommendations are to introduce complementary foods between 4 and 6 months of age



Key Takeaways: Early Introduction



There is a narrow window of opportunity to prevent peanut allergy, and that window closes earliest for infants with severe eczema



Modern guidelines recommend the introduction of peanut- and egg-containing foods as part of a diverse complementary food diet between 4 and 6 months of age



Do not purposefully delay the introduction of other common allergens once complementary feeding starts



At-home early introduction without screening is safe, but screening may be preferred by some families



Questions?